

**ULTRA-THIN Si CHANNEL MOSFET USING A SELF-ALIGNED OXYGEN
IMPLANT AND DAMASCENE TECHNIQUE**

ABSTRACT OF THE DISCLOSURE

The present invention provides a thin channel MOSFET having low external resistance. In broad terms, a silicon-on-insulator structure comprising a SOI layer located atop a buried insulating layer, said SOI layer having a channel region which is thinned by the presence of an underlying localized oxide region that is located on top of and in contact with said buried insulating layer; and a gate region located atop said SOI layer, wherein said localized oxide region is self-aligned with the gate region. A method for forming the inventive MOSFET is also provided comprising forming a dummy gate region atop a substrate; implanting oxide forming dopant through said dummy gate to create a localized oxide region in a portion of the substrate aligned to the dummy gate region that thins a channel region; forming source/drain extension regions abutting said channel region; and replacing the dummy gate with a gate conductor.